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GREENLAND RESERVOIR MONTGOMERY COUNTY, PENNSYLVANIA

Pacific Northwest Environmental Research Laboratory

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June 1975

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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REPORT
ON
GREENLANE RESERVOIR
MONTGOMERY COUNTY
PENNSYLVANIA
EPA REGION III
WORKING PAPER No. 418

WITH THE COOPERATION OF THE
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES
AND THE
PENNSYLVANIA NATIONAL GUARD
JUNE, 1975

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Pennsylvania Department of Environmental Resources for professional involvement and to the Pennsylvania National Guard for conducting the tributary sampling phase of the Survey.

Walter A. Lyon, Director of the Bureau of Water Quality Management, Richard M. Boardman, Chief of the Division of Water Quality, and James T. Ulanoski, Aquatic Biologist of the Division of Water Quality, provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

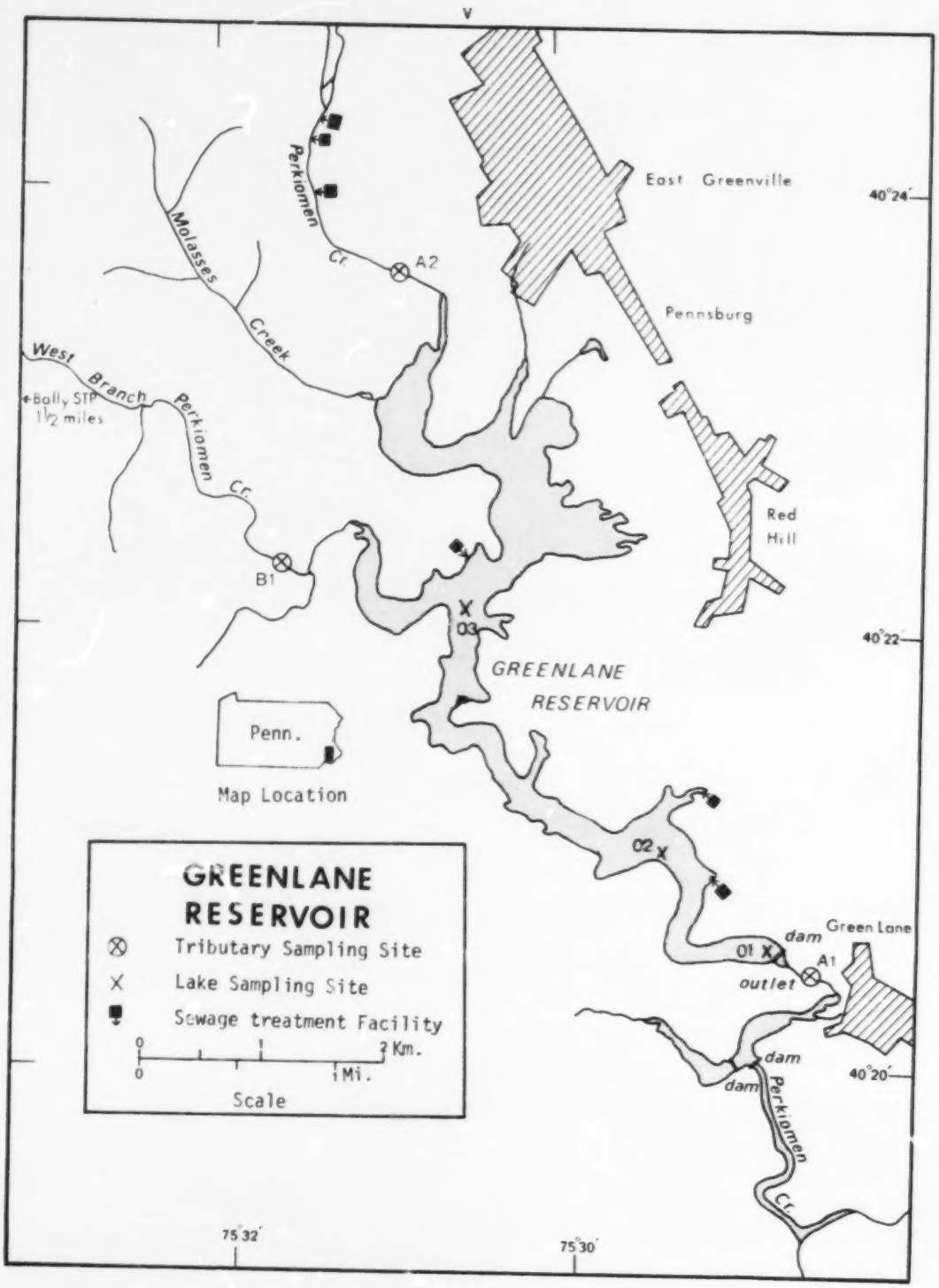
Major General Harry J. Mier, Jr., the Adjutant General of Pennsylvania, and Project Officer Major Ronald E. Wickard, who directed the volunteer efforts of the Pennsylvania National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

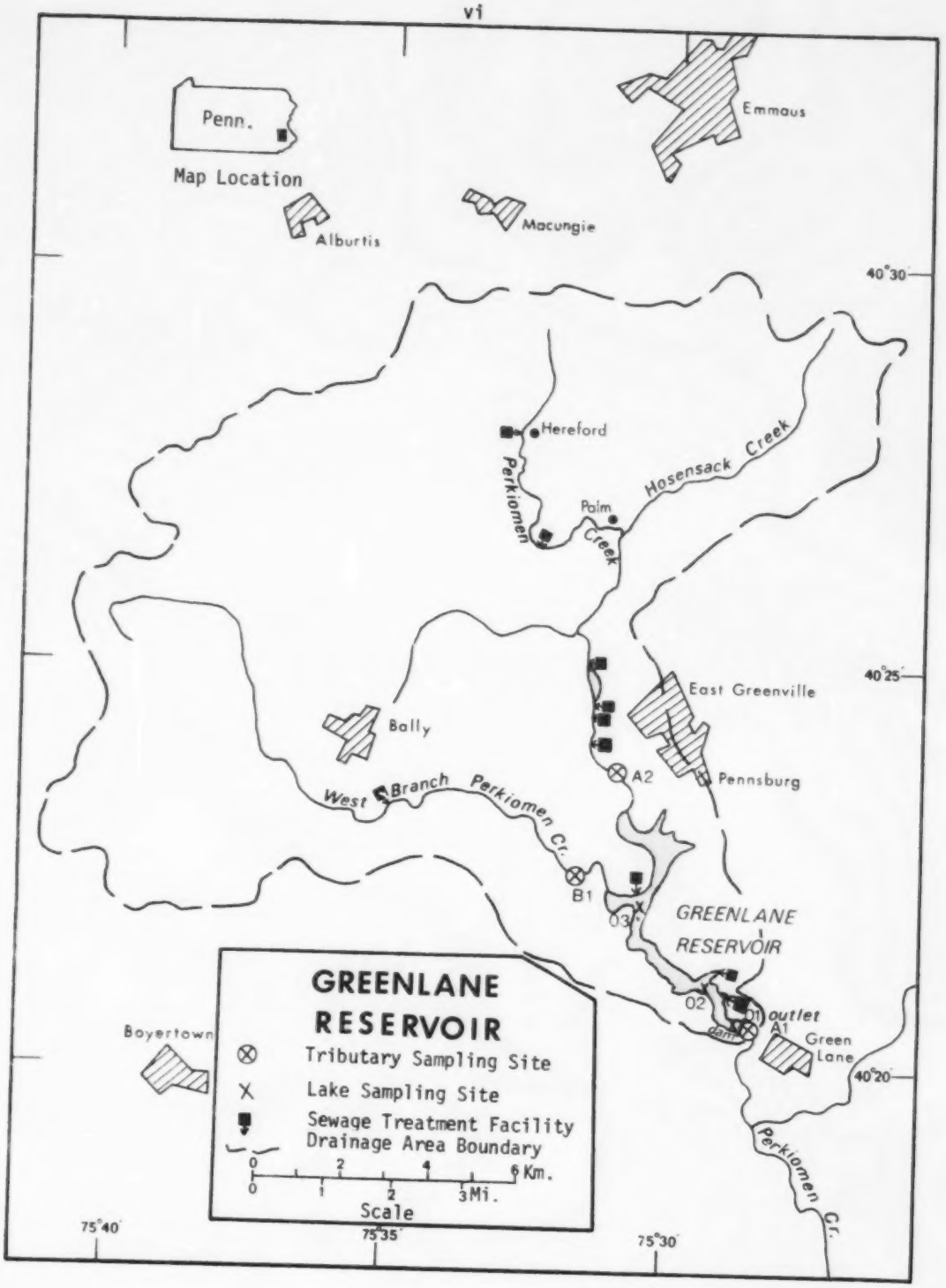
NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF PENNSYLVANIA

LAKE NAME	COUNTY
Allegheny Reservoir	McKean, Warren, PA; Cattarugus, NY
Beaver Run Reservoir	Westmoreland
Beltzville	Carbon
Blanchard Reservoir	Centre
Canadohta	Crawford
Conneaut	Crawford
Conewago (Pinchot)	York
Greenlane	Montgomery
Harveys	Luzerne
Indian	Somerset
Naomi	Monroe
Ontelaunee	Berks
Pocono	Monroe
Pymatuning Reservoir	Crawford, PA; Ashtabula, OH
Shenango River Reservoir	Mercer
Stillwater	Monroe
Wallenpaupack	Pike, Wayne


East Greenville
Pennsburg
Red Hill
Perkiomen Cr.
Molasses Creek
West Branch Perkiomen Cr.
Bally STP
1½ miles
A2
B1
03
02
01
A1
dam
outlet
Green Lane
GREENLANE RESERVOIR
Penn.
Map Location
GREENLANE RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage treatment Facility
0 1 2 Km.
0 1 Mi.
Scale
40°24'
40°22'
40°20'
75°32'
75°30'


Penn.
Map Location
Emmaus
Alburtis
Macungie
40°30'
Hereford
Perkiomen
Palm
Creek
Hosensack Creek
East Greenville
40°25'
Bally
A2
Pennsburg
West Branch Perkiomen Cr.
B1
03
GREENLANE
RESERVOIR
02
01
outlet
dam
A1
Green
Lane
Boyertown
40°20'
Perkiomen Cr.
GREENLANE
RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
0 2 4 6 Km.
0 1 2 3 Mi.
Scale
75°40'
75°35'
75°30'

GREENLANE RESERVOIR*

STORET NO. 4207

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate that Greenlane Reservoir is eutrophic. It ranked last in overall trophic quality when the 17 Pennsylvania lakes sampled in 1973 were compared using a combination of six parameters**. Fifteen of the lakes had less median total and dissolved phosphorus, 15 had less median inorganic nitrogen, 14 had less mean chlorophyll a, and 13 had greater mean Secchi disc transparency. Marked depression of dissolved oxygen with depth occurred at stations 1 and 2 in July and October and at station 3 in July.

Survey limnologists noted an algal bloom in July and a heavy bloom in the northern portion of the reservoir in October.

B. Rate-Limiting Nutrient:

The algal assay results indicate phosphorus limitation at the time the sample was taken (04/17/73). The reservoir data indicate phosphorus limitation at the other sampling times as well.

C. Nutrient Controllability:

1. Point sources--The phosphorus contribution from known point sources amounted to 60.5% of the total load reaching Greenlane Reservoir during the sampling year. The known point sources

* Table of metric conversions--Appendix A.
** See Appendix B.

include the Borough of Bally (1.5%), Candlewyck Inn (<0.1%), Conte & Sons Packing Company (32.2%), East Greenville MWW (5.4%), Hereford Estates (2.7%), Northeast Bible Institute (0.1%), Pillsbury Company (1.5%), Upper Montgomery (16.6%), and septic tanks, which include Knoll Industries, (0.1%).

The present phosphorus loading rate of 12.83 $g/m^2/yr$ is 11 times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic rate (see page 15). On the basis of Survey data, it is very likely that the trophic condition of Greenlane Reservoir will continue to deteriorate if the present loading rate is maintained.

Because of the existing trophic condition of the reservoir, all phosphorus inputs should be minimized to the greatest practicable extent to reduce the rate of eutrophication.

2. Non-point sources--The phosphorus contributions of non-point sources accounted for nearly 40% of the total load reaching the reservoir during the sampling year. The West Branch of Perkiomen Creek contributed 12.5%, and Perkiomen Creek and the ungaged drainage area were estimated to have contributed 21.5% and 5.4% of the total load, respectively.

The phosphorus export rate of the West Branch of Perkiomen Creek was 93 $kg/km^2/yr$ (see page 15). This rate is quite high

compared to the exports of the two streams tributary to nearby Beltzville Lake* (each with an export rate of 11 kg/km^2/yr).

It is not known whether the high rate is due to underestimation of the phosphorus load from the Borough of Bally wastewater treatment plant or an unknown point source in the drainage.

* Working Paper No. 414.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

A. Lake Morphometry†:

1. Surface area: 3.29 kilometers^2.
2. Mean depth: 5.0 meters.
3. Maximum depth: >18.9 meters.
4. Volume: 16.450 x 10^6 m^3.
5. Mean hydraulic retention time: 50 days (based on outlet flow).

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Perkiomen Creek	97.6	2.6
West Branch, Perkiomen Creek	56.7	1.8
Minor tributaries & immediate drainage -	24.6	0.5
Total	178.9	4.9

2. Outlet -

Perkiomen Creek	182.2**	3.8

C. Precipitation***:

1. Year of sampling: 106.0 centimeters.
2. Mean annual: 105.6 centimeters.

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† Ulanoski, 1975.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Adjusted to equal sum of subdrainage areas plus lake area.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Greenlane Reservoir was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from three stations on the lake and from a number of depths at each station (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll *a* analysis. The maximum depths sampled were 18.9 meters at station 1, 10.4 meters at station 2, and 4.9 meters at station 3.

The lake sampling results are presented in full in Appendix D and are summarized in the following table.

a. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR [illegible] DAM
STORET CODE 4207

	1ST SAMPLING (4/17/73)			2ND SAMPLING (7/24/73)			3RD SAMPLING (11/ 8/73)		
	3 SITES			3 SITES			3 SITES		
PARAMETER	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN
TEMP (C)	9.0 - 12.0	10.3	10.5	13.1 - 20.7	21.0	21.5	14.5 - 21.0	20.7	21.5
DISS OXY (MG/L)	10.6 - 13.7	11.9	11.8	0.1 - 11.0	3.8	0.5	0.9 - 8.5	3.9	2.1
CNDCTVY (MCROMO)	140. - 145.	141.	141.	105. - 172.	140.	150.	200. - 320.	214.	210.
PH (STAND UNITS)	7.5 - 8.5	8.1	8.2	6.7 - 7.5	7.0	6.9	6.7 - 8.3	7.2	7.1
TOT ALK (MG/L)	30. - 33.	32.	32.	33. - 59.	43.	41.	52. - 72.	64.	62.
TOT P (MG/L)	0.053 - 0.125	0.076	0.071	0.050 - 0.114	0.073	0.061	0.049 - 0.130	0.071	0.055
ORTHO P (MG/L)	0.009 - 0.034	0.014	0.014	0.010 - 0.043	0.024	0.021	0.009 - 0.034	0.023	0.021
NO2+NO3 (MG/L)	1.500 - 1.800	1.671	1.700	0.100 - 1.800	0.857	1.000	0.110 - 0.370	0.253	0.250
AMMONIA (MG/L)	0.040 - 0.150	0.074	0.060	0.040 - 0.600	0.184	0.040	0.110 - 1.600	0.413	0.240
KJEL N (MG/L)	0.500 - 0.900	0.650	0.600	0.300 - 1.500	0.838	0.900	1.000 - 2.700	1.308	1.200
INORG N (MG/L)	1.550 - 1.950	1.745	1.740	0.210 - 1.840	1.023	1.440	0.330 - 1.710	0.677	0.510
TOTAL N (MG/L)	2.100 - 2.600	2.321	2.300	1.300 - 2.100	1.698	1.700	1.240 - 2.810	1.571	1.470
CHLRPYL A (UG/L)	24.1 - 53.1	44.2	50.3	10.3 - 13.4	11.6	10.7	14.7 - 17.6	16.2	16.4
SECCHI (METERS)	0.5 - 1.5	1.3	0.9	0.6 - 0.8	0.7	0.6	1.3 - 1.8	1.4	1.4

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
04/17/73	1. Stephanodiscus	13,676
	2. Chlamydomonas	1,091
	3. Melosira	196
	4. Cryptomonas	140
	5. Scenedesmus	84
	Other genera	46
	Total	15,233
07/24/73	1. Aphanizomenon	1,967
	2. Melosira	265
	3. Fragilaria	155
	4. Oocystis	133
	5. Microcystis	88
	Other genera	154
	Total	2,762
10/03/72	1. Fragilaria	1,838
	2. Cryptomonas	1,171
	3. Melosira	689
	4. Scenedesmus	666
	5. Coelastrum	459
	Other genera	1,034
	Total	5,857

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
04/17/73	01	29.1
	02	53.1
	03	50.3
07/24/73	01	10.3
	02	10.7
	03	13.9
10/03/73	01	14.7
	02	16.4
	03	17.6

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.030	1.785	15.7
0.050 P	0.080	1.785	34.4
0.050 P + 1.0 N	0.080	2.785	37.3
1.0 N	0.030	2.785	15.6

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potential primary productivity of Greenlane Reservoir was very high at the time the sample was collected. There was a significant increase in yield compared to the control when the level of orthophosphorus was increased, but there was no change in yield when only nitrogen was added. Based on these results, phosphorus limitation is indicated.

The reservoir data indicate phosphorus limitation in July and October as well; i.e., the mean N/P ratios were 43/1 and 29/1, respectively, and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Pennsylvania National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page vi), except for the high runoff months of February and March when two samples were collected. Sampling was begun in May, 1973, and was completed in April, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Pennsylvania District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

Except for phosphorus at station A-2, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. However, the upstream point-source phosphorus loads exceeded the load measured at A-2, and the non-point phosphorus load of Perkiomen Creek was estimated as given below (it is assumed that all phosphorus loads eventually reach the reservoir).

Nutrient loadings for Perkiomen Creek at A-2 and the unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads (minus point-source loads), in $kg/km^2/yr$, in the

* See Working Paper No. 175.

West Branch of Perkiomen Creek at station B-1 and multiplying by the A-2 and ZZ areas in km^2.

The operators of the Bally, Candlewyck Inn, Northeast Bible Institute, Pillsbury Company, and Upper Montgomery wastewater treatment plants provided monthly effluent samples and corresponding flow data. The operators of Conte & Sons Packing Company, East Greenville, and Hereford Estates wastewater treatment plants did not participate in the Survey, and nutrient loads were estimated at 1.134 kg P and 3.401 kg N/capita/year.

The operator of the Knoll Industries sanitary and industrial wastewater treatment facilities also did not participate. Loads attributed to the septic tank treating sanitary wastes were estimated at 0.1134 kg P and 4.263 kg N/capita/year. Nutrient loads contributed in the industrial wastes could not be determined due to insufficient information.

A. Waste Sources:

1. Known muncipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Candlewyck Inn	125	prim. clarifier	9.4	Perkiomen Creek
Pillsbury Co.	60*	trickling filter	70.4**	Perkiomen Creek
Borough Bally	1,200	act. sludge	237.5	West Br., Perkiomen Creek
Upper Montgomery	5,500	trickling filter	3,240.9	Greenlane Res.
NE Bible Institute	200	act. sludge	22.6	Greenlane Res.
Knoll Indust.	243***	septic tank	37.9	Perkiomen Creek
East Greenville†	2,003	trickling filter	2,725.5	Perkiomen Creek
Hereford Estates (500 trailers)††	1,000	act. sludge	113.6	Perkiomen Creek
Green Hill Mobile Park	120	act. sludge	27.4	Greenlane Res.

2. Known industrial†† -

Name	Product	Treatment	Mean Flow (m^3/d)	Receiving Water
Knoll Industries	-	alum ppt.	321.7	Perkiomen Creek
Conte & Sons Packing Co.	vege-tables	aer. ponds	2,725.5	Perkiomen Creek

* Population equivalent based on 250 employees, 5 days/week.
** Includes industrial waste (organics such as flour, sugar, and shortening).
*** Population equivalent based on a total of 850 employees, 6 days/week, 24 hours/day (DelVecchio, 1975).
† Stanley, 1975.
†† Appenhager, 1975.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Perkiomen Creek	9,075	21.5
West Br., Perkiomen Creek	5,290	12.5
b. Minor tributaries & immediate drainage (non-point load) -	2,290	5.4
c. Known municipal STP's -		
Candlewyck Inn	30†	<0.1
Pillsbury Company	620†	1.5
Borough of Bally	625	1.5
Upper Montgomery	7,005	16.6
Northeast Bible Institute	50	0.1
Knoll Industries	30	<0.1
East Greenville MWW	2,270	5.4
Hereford Estates	1,135	2.7
Green Hill Mobile Park	120	0.3
d. Septic tanks* -	5	<0.1
e. Known industrial -		
Knoll Industries	unknown	-
Conte & Sons Packing Co.**	13,610	32.2
f. Direct precipitation*** -	60	0.1
Total	42,215	100.0

2. Outputs -

Lake outlet - Perkiomen Creek	9,225

3. Net annual P accumulation - 32,990 kg.

† Based on two samples.
* Estimate based on 10 shoreline dwellings; see Working Paper No. 175.
** Estimated pop. equivalent of 12,000 (Appenhager, 1975).
*** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Perkiomen Creek	257,175	46.8
West Br., Perkiomen Creek	149,405	27.2
b. Minor tributaries & immediate drainage (non-point load) -	64,820	11.8
c. Known municipal STP's -		
Candlewyck Inn	85	<0.1
Pillsbury Company	315	0.1
Borough of Bally	2,190	0.4
Upper Montgomery	19,890	3.6
Northeast Bible Institute	180	<0.1
Knoll Industries	1,035	0.2
East Greenville MWW	6,810	1.2
Hereford Estates	3,400	0.6
Green Hill Mobile Park	250	<0.1
d. Septic tanks* -	105	<0.1
e. Known industrial -		
Knoll Industries	unknown	-
Conte & Sons Packing Co.***	40,810	7.4
f. Direct precipitation*** -	3,550	0.6
Total	550,020	100.0

2. Outputs -

Lake outlet - Perkiomen Creek 278,470

3. Net annual N accumulation - 271,550 kg.

† Based on two samples.
* Estimate based on 10 shoreline dwellings; see Working Paper No. 175.
** Estimated pop. equivalent of 12,000 (Appenhager, 1975).
*** See Working Paper No. 175.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr
West Branch, Perkiomen Creek	93	2,635

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m²/yr	12.83	10.03	167.2	82.5

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Greenlane Reservoir:

"Dangerous" (eutrophic rate)	1.16
"Permissible" (oligotrophic rate)	0.58

V. LITERATURE REVIEWED

Appenhager, Ernie, 1975. Personal communication (STP information). PA Dept. Env. Resources, Reading.

DelVecchio, Dave (Chemist), 1975. Personal communication (loading rates, population equivalent). Knoll Industries, East Greenville.

Stanley, Walt, 1975. Personal communication (Greenville STP information). PA Dept. Env. Resources, Norristown.

Ulanoski, James, 1975. Personal communication (lake morphometry). PA Dept. Env. Resources, Harrisburg.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	4224	LAKE NAOMI	445
2	4220	BELTZVILLE DAM	423
3	4222	HARVEY'S LAKE	413
4	4228	STILLWATER LAKE	401
5	4227	POCONO LAKE	389
6	4223	INDIAN LAKE	388
7	3641	ALLEGHENY RESERVOIR	385
8	4229	LAKE WALLENPAUPACK	371
9	4221	CANADOHTA LAKE	369
10	4219	BEAVER RUN RESERVOIR	360
11	4204	CONNEAUT LAKE	307
12	4226	PINCHOT LAKE	256
13	4213	PYMATUNING RESERVOIR	206
14	4216	SHENANGO RIVER RESERVOIR	157
15	4225	ONTELAUNEE DAM	101
16	4201	BLANCHARD RESERVOIR	85
17	4207	GREENLANE DAM	53

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS P	INDEX NO
3641	ALLEGHENY RESERVOIR	56 (9)	38 (6)	63 (10)	100 (16)	69 (11)	59 (8)	385
4201	BLANCHARD RESERVOIR	13 (2)	13 (2)	25 (4)	31 (5)	3 (0)	0 (0)	85
4204	CONNEAUT LAKE	44 (7)	63 (10)	69 (11)	56 (9)	34 (5)	41 (6)	307
4207	GREENLANE DAM	6 (1)	6 (1)	19 (3)	13 (2)	3 (0)	6 (1)	53
4213	PYMATUNING RESERVOIR	0 (0)	72 (11)	6 (1)	0 (0)	100 (16)	28 (4)	206
4216	SHENANGO RIVER RESERVOIR	19 (3)	44 (7)	13 (2)	6 (1)	47 (7)	28 (4)	157
4219	BEAVER RUN RESERVOIR	94 (15)	19 (3)	88 (14)	81 (13)	19 (2)	59 (8)	360
4220	BELTZVILLE DAM	88 (14)	25 (4)	94 (15)	94 (15)	34 (5)	88 (13)	423
4221	CANADOHTA LAKE	50 (8)	97 (15)	56 (9)	19 (3)	59 (9)	88 (13)	369
4222	HARVEY'S LAKE	63 (10)	81 (13)	100 (16)	63 (10)	47 (7)	59 (8)	413
4223	INDIAN LAKE	100 (16)	31 (5)	75 (12)	75 (12)	19 (2)	88 (13)	388
4224	LAKE NAOMI	81 (13)	88 (14)	44 (7)	69 (11)	88 (14)	75 (12)	445
4225	ONTELAUNEE DAM	25 (4)	0 (0)	0 (0)	44 (7)	19 (2)	13 (2)	101
4226	PINCHOT LAKE	31 (5)	56 (9)	31 (5)	38 (6)	81 (13)	19 (3)	256
4227	POCONO LAKE	38 (6)	97 (15)	50 (8)	88 (14)	75 (12)	41 (6)	389
4228	STILLWATER LAKE	72 (11)	72 (11)	38 (6)	25 (4)	94 (15)	100 (16)	401
4229	LAKE WALLENPAUPACK	72 (11)	50 (8)	81 (13)	50 (8)	59 (9)	59 (8)	371

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS P
3641	ALLEGHENY RESERVOIR	0.016	0.380	414.250	3.700	13.800	0.006
4201	BLANCHARD RESERVOIR	0.064	1.300	453.143	15.187	14.900	0.046
4204	CONNEAUT LAKE	0.023	0.185	402.000	7.567	14.600	0.007
4207	GREENLANE DAM	0.066	1.475	460.222	24.011	14.900	0.020
4213	PYMATUNING RESERVOIR	0.070	0.180	467.750	56.333	7.700	0.008
4216	SHENANGO RIVER RESERVOIR	0.058	0.340	463.555	26.800	14.500	0.008
4219	BEAVER RUN RESERVOIR	0.009	0.835	384.833	5.183	14.600	0.006
4220	BELTZVILLE DAM	0.010	0.815	362.444	4.856	14.600	0.005
4221	CANADOHTA LAKE	0.020	0.130	436.000	19.167	14.100	0.005
4222	HARVEY'S LAKE	0.015	0.160	338.000	5.967	14.500	0.006
4223	INDIAN LAKE	0.008	0.520	400.222	5.211	14.800	0.005
4224	LAKE NAOMI	0.014	0.135	443.333	5.533	8.000	0.005
4225	ONTELAUNEE DAM	0.040	2.150	470.667	11.783	14.800	0.011
4226	PINCHOT LAKE	0.027	0.245	453.000	13.950	11.500	0.008
4227	POCONO LAKE	0.024	0.130	438.800	4.980	13.200	0.007
4228	STILLWATER LAKE	0.015	0.180	449.000	18.233	7.900	0.004
4229	LAKE WALLENPAUPACK	0.015	0.250	394.583	9.617	14.100	0.006

TRIBUTARY FLOW INFORMATION FOR PENNSYLVANIA 1/27/75

LAKE CODE 4207 GREEN LANE RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 183.9

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4207A1	183.9	4.62	5.38	6.09	4.76	3.62	2.58	3.09	2.97	2.32	2.49	3.60	4.25	3.81
4207A2	97.6	2.83	3.26	3.40	2.83	2.46	2.38	1.93	2.41	2.52	1.98	2.41	2.89	2.60
4207B1	56.7	1.93	2.29	2.44	1.95	1.64	1.56	1.19	1.59	1.67	1.25	1.59	1.98	1.75
4207Z2	24.6	0.59	0.71	0.79	0.62	0.48	0.34	0.40	0.40	0.31	0.31	0.45	0.57	0.50

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 183.9
SUM OF SUB-DRAINAGE AREAS = 179.0

TOTAL FLOW IN = 58.33
TOTAL FLOW OUT = 45.76

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4207A1	5	73	4.81	19	2.52				
	6	73	0.45	12	1.30				
	7	73	2.03	15	1.70				
	8	73	1.30	12	1.25				
	9	73	1.27	9	1.53				
	10	73	1.08	9	1.13				
	11	73	1.10	10	1.35				
	12	73	6.99	8	1.25				
	1	74	4.98	8	3.26				
	2	74	2.55	5	2.15				
	3	74	2.01	20	3.34				
	4	74	4.25	16	4.29				
4207A2	5	73	3.66	19	2.32				
	6	73	2.63	12	1.47				
	7	73	2.24	15	2.46				
	8	73	0.79	12	0.76				
	9	73	0.79	9	0.45				
	10	73	0.59	9	0.54				
	11	73	0.65	10	0.54				
	12	73	3.45	5	1.44				
	1	74	3.45	8	2.32				
	2	74	1.37	5	2.21				
	3	74	2.44	15	2.32				
	4	74	5.27	16	4.98				

12

TRIBUTARY FLOW INFORMATION FOR PENNSYLVANIA 1/27/75

LAKE CODE 4207 GREEN LANE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
420781	5	73	2.64	19	1.16				
	6	73	1.27	12	0.62				
	7	73	1.08	15	1.05				
	8	73	0.42	12	0.40				
	9	73	0.40	9	0.25				
	10	73	0.37	9	0.28				
	11	73	0.40	10	0.31				
	12	73	2.24	8	0.88				
	1	74	2.04	8	1.47				
	2	74	1.10	5	1.25				
	3	74	1.78	26	1.36				
	4	74	2.72	16	2.86				
420727	5	73	0.62	19	0.34				
	6	73	0.42	12	0.17				
	7	73	0.34	15	0.22				
	8	73	0.17	12	0.16				
	9	73	0.16	9	0.20				
	10	73	0.14	10	0.15				
	11	73	0.14	8	0.14				
	12	73	0.91	8	0.16				
	1	74	0.65	5	0.42				
	2	74	0.34	25	0.28				
	3	74	0.62	16	0.42				
	4	74	1.19	15	1.22				

STORET RETRIEVAL DATE 75/01/27

420701
40 20 30.0 075 28 50.0
GREENLANE DAM
42091 PENNSYLVANIA

11EPALES
3

2111202
0062 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/04/17	14 00	0000	10.4		36	145	8.30	33	0.060	0.800	1.600	0.011
	14 00	0006	10.3	12.5		143	8.40	32	0.050	0.600	1.600	0.010
	14 00	0015	10.2	11.2		140	8.20	31	0.060	0.500	1.600	0.012
	14 00	0025	9.6	10.1		141	8.00	30	0.100	0.600	1.700	0.021
	14 00	0035	9.4	10.2		141	7.90	31	0.130	0.600	1.700	0.027
	14 00	0045	9.2	10.0		141	7.80	32	0.130	0.600	1.800	0.034
	14 00	0058	9.0	10.0		141	7.80	32	0.150	0.500	1.800	0.028
73/07/24	09 40	0000	25.5		24	152	9.70	34	0.050	1.600	0.160	0.011
	09 40	0005	25.4	8.1		151	9.00	34	0.060	1.200	0.280	0.014
	09 40	0015	21.2	0.1		140	6.70	33	0.100	0.600	1.400	0.022
	09 40	0025	18.7	0.2		144	6.70	38	0.120	0.400	1.600	0.037
	09 40	0040	14.5	1.2		133	6.70	37	0.040	0.300	1.600	0.043
	09 40	0056	13.1	0.6		139	6.70	49	0.600	1.000	1.000	0.025
73/10/03	15 50	0000	21.6		72	207	8.00	66	0.220	1.200	0.260	0.009
	15 50	0005	21.2	8.0		207	7.50	52	0.210	1.200	0.250	0.015
	15 50	0015	20.4	0.8		208	6.80	56	0.480	1.200	0.370	0.035
	15 50	0025	20.2	1.2		209	6.80	56	0.490	1.300	0.350	0.033
	15 50	0040	20.0	1.4		214	6.70	59	0.610	1.400	0.260	0.031
	15 50	0062	19.5	0.4		328	6.70	72	1.600	2.700	0.110	0.033

STORET RETRIEVAL DATE 75/01/27

420701
40 20 30.0 075 28 50.0
GREENLANE DAM
42091 PENNSYLVANIA

11EPALES 2111202
3 0062 FEET DEPTH

42

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/04/17	14 00	0000	0.059	29.1
	14 00	0006	0.059	
	14 00	0015	0.061	
	14 00	0025	0.077	
	14 00	0035	0.089	
	14 00	0045	0.092	
	14 00	0058	0.101	
73/07/24	09 40	0000	0.067	10.3
	09 40	0005	0.063	
	09 40	0015	0.050	
	09 40	0025	0.066	
	09 40	0040	0.051	
	09 40	0056	0.118	
73/10/03	15 50	0000	0.049	14.7
	15 50	0005	0.073	
	15 50	0015	0.056	
	15 50	0025	0.056	
	15 50	0040	0.065	
	15 50	0062	0.130	

STORET RETRIEVAL DATE 75/01/27

420702
40 20 55.0 075 29 25.0
GREENLANE DAM
42091 PENNSYLVANIA

11EPALES
3

2111202
0028 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/04/17	14 30	0000	11.7		60	141	8.80	32	0.040	0.600	1.600	0.008
	14 30	0006	11.6	13.1		140	8.80	33	0.050	0.800	1.500	0.009
	14 30	0015	10.3	12.1		141	8.50	31	0.040	0.600	1.600	0.010
	14 30	0024	9.7	10.8		141	8.10	31	0.070	0.600	1.700	0.023
73/07/24	10 30	0000	26.5		24	166	9.80	40	0.050	1.200	0.220	0.010
	10 30	0005	25.5	9.5		156	9.20	48	0.090	0.900	0.400	0.017
	10 30	0015	21.5	0.2		129	6.80	41	0.140	0.400	1.300	0.021
	10 30	0034	15.6	0.6		150	6.80	51	0.310	0.400	1.200	0.034
73/10/03	15 30	0000	21.6		54	206	7.30	65	0.140	1.100	0.230	0.009
	15 30	0005	21.2	8.6		206	7.60	65	0.140	1.000	0.240	0.011
	15 30	0015	20.5	2.0		211	6.90	68	0.430	1.200	0.290	0.027
	15 30	0024	20.3	2.2		213	6.80	69	0.490	1.200	0.270	0.027

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/04/17	14 30	0000	0.060	53.1
	14 30	0006	0.057	
	14 30	0015	0.053	
	14 30	0024	0.066	
73/07/24	10 30	0000	0.055	10.7
	10 30	0005	0.094	
	10 30	0015	0.052	
	10 30	0034	0.069	
73/10/03	15 30	0000	0.056	16.4
	15 30	0005	0.055	
	15 30	0015	0.054	
	15 30	0024	0.058	

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STORET RETRIEVAL DATE 75/01/27

420703
40 22 33.0 075 30 15.0
GREENLANE DAM
42091 PENNSYLVANIA

11EPALES
3

2111202
0020 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/04/17	15 00	0000	12.2		18	140	8.20	31	0.040	0.400	1.700	0.020
	15 00	0006	12.0	13.7		140	8.60	31	0.040	0.700	1.700	0.016
	15 00	0016	11.3	11.7		145	8.30	32	0.070	0.700	1.800	0.020
73/07/24	10 55	0000	26.7		32	172	9.80	47	0.060	1.300	0.320	0.019
	10 55	0005	25.8	11.0		105	9.20	49	0.060	0.900	0.490	0.019
	10 55	0015	21.2	0.4		157	6.90	54	0.450	0.700	1.000	0.036
73/10/03	15 10	0000	21.2		38	207	8.30	65	0.110	1.300	0.220	0.010
	15 10	0005	20.6	7.2		212	7.50	67	0.180	1.100	0.240	0.023
	15 10	0015	20.4	6.8		218	7.10	71	0.280	1.100	0.330	0.039

26

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/04/17	15 00	0000	0.080	50.3
	15 00	0006	0.079	
	15 00	0016	0.125	
73/07/24	10 55	0000	0.089	13.9
	10 55	0005	0.090	
	10 55	0015	0.087	
73/10/03	15 10	0000	0.067	17.6
	15 10	0005	0.088	
	15 10	0015	0.113	

APPENDIX E

TRIBUTARY and WASTEWATER
TREATMENT PLANT DATA

STORET RETRIEVAL DATE 75/02/03

4207A1
40 20 20.0 075 28 32.0
PERKIOMEN CREEK
42039 7.5 PERKIOMENVIL
O/GREEN LANE RES
SEC RD BRDG .2 MI DOWNSTREAM OF DAM
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/05/19	10 25		1.260	0.860	0.120	0.011	0.047
73/06/13	11 45		1.180	0.700	0.076	0.009	0.045
73/07/17	08 15		0.740	0.940	0.084	0.010	0.070
73/08/12	13 45		0.640	1.200	0.760	0.062	0.175
73/09/10	08 00		0.440	1.600	1.050	0.113	0.250
73/10/17	17 15		0.660	0.750	0.140	0.018	0.055
73/11/11	15 30		0.720	0.750	0.208	0.028	0.095
73/12/04	14 05		0.840	0.700	0.250	0.028	0.060
74/01/08	08 30		2.100	1.050	0.148	0.064	0.095
74/02/14	17 20		2.640	0.300	0.080	0.040	0.070
74/02/26	14 55		2.640	0.600	0.025	0.035	0.100
74/03/13	08 10		2.000	0.900	0.030	0.010	0.080
74/03/26	11 00		1.920	1.100	0.092	0.015	0.050
74/04/16	08 30		1.600	0.500	0.027	0.017	0.020

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STORET RETRIEVAL DATE 75/02/03

4207A2
40 23 35.0 075 30 58.0
PERKIOMEN CREEK
42 7.5 E GREENVILLE
I/GREEN LANE RES
SEC RD BRDG .5 MI W OF PENNSBURG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/05/19	09	10	1.640	0.280	0.017	0.011	0.030
73/06/13	12	10	1.960	1.600	0.189	0.031	0.125
73/07/17	08	35	1.900	0.280	0.020	0.016	0.055
73/08/12	14	02	1.440	0.330	0.078	0.084	0.125
73/09/10	08	20	1.740	0.400	0.057	0.046	0.090
73/10/17	17	35	1.600	1.100	0.058	0.088	0.140
73/11/11	15	10	1.920	0.200	0.016	0.032	0.050
73/12/09	13	45	2.180	2.100	0.276	0.088	0.360
74/01/08	08	50	3.200	0.900	0.060	0.040	0.060
74/02/14	17	05	2.520	0.300	0.025	0.015	0.020
74/02/26	14	40	2.700	1.300	0.065	0.030	0.065
74/03/13	08	25	2.800	0.800	0.030	0.020	0.040
74/03/26	11	01	2.520	0.900	0.060	0.030	0.040
74/04/16	08	42	2.100	0.500	0.030	0.025	0.035

STORET RETRIEVAL DATE 75/02/03

420781
40 22 17.0 075 31 33.0
BRANCH PERKIOMEN CR
42 7.5 SASSAMANSVIL
T/GREEN LANE RES
SEC RD BRDG .3 MI # OF PA HWY 663
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/05/14	09 40		1.400	0.420	0.027	0.031	0.055
73/06/13	12 00		1.700	0.800	0.040	0.048	0.130
73/07/17	09 50		1.800	1.050	0.042	0.083	0.115
73/08/12	14 15		1.300	0.215	0.027	0.105	0.125
73/09/10	08 30		1.440	0.670	0.027	0.132	0.150
73/10/17	17 45		1.400	1.500	0.060	0.200	0.230
73/11/11	15 00		1.520	1.000	0.092	0.168	0.190
73/12/04	13 35		2.100	1.300	0.080	0.152	0.390
74/01/08	09 00		3.200	0.200	0.036	0.036	0.050
74/02/14	16 55		2.400	0.400	0.045	0.035	0.040
74/02/26	14 30		2.520	0.300	0.022	0.040	0.070
74/03/13	08 35		2.810	0.300	0.030	0.025	0.040
74/03/26	11 25		2.640	0.300	0.020	0.030	0.045
74/04/16	08 52		2.200	0.300	0.020	0.020	0.035

STORET RETRIEVAL DATE 75/02/03

4207AA PR4207AA P000125
40 21 37.0 075 30 48.0
CANDLE WYCK INN (GREEN LANE)
42039 7.5 SASSAMANVILL
T/GREEN LANE RESERVOIR
PERKIOMEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/08/22	13 30		0.110	22.000	0.465	7.400		0.002	0.004
73/09/30	16 00		0.080	69.000	0.100	3.400	9.800	0.003	0.004
73/10/25	14 00		2.520	20.000	0.210	12.000	14.500	0.003	0.003
73/11/27	16 30		2.600	16.000	0.250	5.800	11.000	0.002	0.003
74/01/28	16 00		1.000	23.000	0.360	10.100	17.000	0.002	0.002
74/03/22	09 00		2.500	1.00K	0.160	1.250	1.550	0.001	0.002
74/04/24	14 00		1.920	5.000	0.190	8.100	10.000	0.001	0.002
74/06/15	12 20		0.200	21.000	0.360	2.878	6.200	0.002	0.002
74/07/20	12 30		4.100	7.700	0.290	6.000	7.300	0.002	0.002
74/08/22	13 15		0.080	7.000	0.130		3.600	0.002	0.002
74/12/20	11 00							0.002	0.002

K VALUE KNOWN TO BE
LESS THAN INDICATED

STONET RETRIEVAL DATE 75/02/03

4207AB TF4207AB P000677
40 24 15.0 075 31 37.0
THE PILLSBURY COMPANY
42 7.5 GREENVILLE
T/GREENLANE RESERVOIR
PERKIOMEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

32

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/12/06	09 00		0.100	11.500	0.140	14.700	22.000	0.044	0.014
74/01/31	11 15		0.200	14.000	0.110	25.000	30.500	0.014	0.023

STORET RETRIEVAL DATE 75/02/03

42078A AS42078A P001200
40 23 03.0 075 34 52.0
BALLY
42 7.5 EAST GREENVI
T/GREEN LANE LAKE
WEST BRANCH PERKIOMEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/08/16	08 45		0.940	26.600	3.700	2.900	3.000	0.072	0.070
73/09/13	08 30		3.700	17.000	4.400	8.620	9.400	0.065	0.060
73/10/11	08 25		1.320	27.000	13.700	10.000	10.000	0.058	0.060
73/12/02			0.270	44.000	18.000	13.000	17.000	0.035	0.052
74/01/15	09 00		7.000	5.900	0.250	3.200	3.900	0.085	0.060
74/01/31	09 00		14.000	8.100	1.600	4.600	5.300	0.056	0.060
74/03/07	08 30		3.120	13.000	2.800	4.500	5.100	0.064	0.060
74/04/26	08 30		15.000	7.200	0.690	3.600	4.400	0.090	0.065
74/05/30	11 15		12.600	19.000	2.100	7.600	9.950	0.063	0.060
74/06/20	11 15		0.680	31.000	11.300	5.700	8.100	0.085	0.060
74/07/18	10 20		4.350	19.000	0.050K	5.800	8.100	0.070	0.074
74/08/27	11 35		6.800	25.000	7.300	8.400	8.500	0.085	0.072

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/02/03

4207XA TF4207XA P005500
40 24 05.0 075 31 21.0
UPPER MONTGOMERY (PENNSBURG)
42 7.5 EAST GREENVI
T/GREEN LANE LAKE
PERKIOMEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/19	08 00								
CP(T)-			1.160	19.250	6.200	9.300	10.500	0.430	0.659
73/06/19	16 00								
73/07/19	07 00								
CP(T)-			4.100	14.000	2.100	4.300	10.500	0.401	0.707
73/07/19	16 00								
73/08/23	07 00								
CP(T)-			3.320	27.300		12.650	15.000	0.331	0.606
73/08/23	16 00								
73/09/20	06 00								
CP(T)-			0.066	16.600	3.500	6.400	7.700	0.541	0.380
73/09/20	16 00								
73/10/18	07 00								
CP(T)-			3.100	27.500		11.000	14.000	0.372	0.573
73/10/18	16 00								
73/11/19	07 00								
CP(T)-			4.000	28.000		12.000	13.000	0.392	0.444
73/11/19	17 00								
73/12/27	07 00								
CP(T)-			3.100	5.600	0.190	0.985	2.000	3.820	0.451
73/12/27	17 00								
74/01/29	07 00								
CP(T)-			1.560	9.500	1.680	2.640	3.600	1.280	1.490
74/01/29	16 00								
74/02/28	07 00								
CP(T)-			0.720	35.000	4.400	5.300	9.100	0.671	1.440
74/02/28	16 00								
74/03/27	07 00								
CP(T)-			0.720	15.500	4.000	4.200	5.600	0.711	0.700
74/03/27	16 00								
74/04/25	07 00								
CP(T)-			2.160	22.000	7.700	6.200	8.100	0.560	1.160
74/04/25	16 00								
74/05/23	07 00								
CP(T)-			0.400	20.000	7.000	4.800	6.900	0.838	1.490
74/05/23	16 00								

STORET RETRIEVAL DATE 75/02/03

4207XA TF4207XA P005500
40 24 05.0 075 31 21.0
UPPER MONTGOMERY (PENNSBURG)
42 7.5 EAST GREENVI
I/GREEN LANE LAKE
PERKIOMEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

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DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/06/27	07 00								
CP(T)-			4.500	16.000	3.800	5.600	6.900	0.438	0.830
74/06/27	16 00								

STORET RETRIEVAL DATE 75/02/10

420721 AS420721 P000400
40 20 49.0 075 29 07.0
NORTHEAST BIBLE INSTITUTE
42 7.5 PERKIOMENVIL
D/GREEN LANE RESERVOIR
GREEN LANE RESERVOIR
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/07/26	08 00								
CP(T)-			0.210	22.000	7.000	3.300	4.540	0.006	0.007
73/07/26	15 00								
73/08/31	08 00								
CP(T)-						4.100	4.400	0.005	0.006
73/08/31	15 00								
73/09/08	08 00								
CP(T)-				25.000	13.000	4.520	6.600	0.005	0.006
73/09/08	15 00								
73/10/30	08 00								
CP(T)-			3.660	12.300	0.086	2.100	3.000	0.005	0.006
73/10/30	14 00								
73/12/06	08 00								
CP(T)-			0.580	5.900	0.180	1.260	1.700	0.005	0.006
73/12/06	14 00								
73/12/22	09 00								
CP(T)-			0.360	4.300	0.210	0.830	1.600	0.004	0.005
73/12/22	14 00								
74/02/07	08 00								
CP(T)-			0.160	40.600	3.800	9.800	15.000	0.005	0.007
74/02/07	14 00								
74/03/05	08 00								
CP(T)-			0.080	32.000	9.000	6.700	10.500	0.006	0.007
74/03/05	14 00								
74/04/01	08 00								
CP(T)-			0.880			1.250	2.100	0.006	0.005
74/04/01	14 00								
74/05/07	08 00								
CP(T)-			0.360	20.000	4.500	5.200	6.600	0.007	0.005
74/05/07	14 00								
74/06/10	08 00								
CP(T)-			2.240	16.000	2.100	3.300	4.600	0.004	0.006
74/06/10	14 00								
74/07/11	08 00								
CP(T)-			0.052	46.000	24.000	5.500	11.000	0.004	0.004
74/07/11	13 00								

STORET RETRIEVAL DATE 75/02/10

420721 AS420721 P000400
40 20 49.0 075 29 07.0
NORTEAST BIBLE INSTITUTE
42 7.5 PERKIOMENVIL
D/GREEN LANE RESERVOIR
GREEN LANE RESERVOIR
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/08/27	08 00								
CP(F)-			0.240	4.300	0.050K		1.700	0.005	0.005
74/08/27	13 00								

K VALUE KNOWN TO BE
LESS THAN INDICATED

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STORET RETRIEVAL DATE 75/02/10

420731 A5420731 P000120
40 22 20.0 075 30 37.0
GREEN HILL MOBILE PARK
42 7.5 SASSAMANVILL
O/GREEN LANE RESERVOIR
GREEN LANE RESERVOIR
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/26			1.050	1.800	0.058	8.200	9.050	0.007	0.007
73/07/19	11 30		6.100	52.500	28.000	11.200	15.000	0.007	0.007
73/08/09	14 00		0.170	11.000	0.320	3.800	13.000	0.007	0.007
73/09/11	14 00		0.154	25.200	10.000	12.000	13.500	0.007	0.008
73/10/10	09 00		2.100	13.000	0.850	12.000	12.000	0.007	0.007
73/11/13	09 00		0.050	29.500	16.800	12.150	14.500	0.007	0.007
73/12/11	13 30		2.200	16.500	0.645	3.740	6.000	0.007	0.007
74/01/22	10 00		1.440	17.000	2.000	1.600	2.400	0.008	0.008
74/03/26	11 00		4.980	27.000		8.000	10.500	0.008	0.008
74/04/08	10 00		0.920	15.600	4.700	4.200	5.780	0.007	0.007
74/05/03	10 00		0.280	35.000	18.800	9.750	11.500	0.007	0.007
74/06/13	10 00		0.080	42.000	21.750	0.420	36.700	0.007	0.007
74/08/06	12 00		0.104	27.000	14.500	6.250	7.100	0.007	0.007